SEMESTER – IV

THEORY SUBJECTS

Sl. No.	Sub. Code	Theory	Contact Hours			Credit
			L	T	P/S	
1.	22AS413	Design of RCC Structures	3	0	0	3

Course Objective	To understand complex structural concepts and behaviour.
Anticipated Learning Outcomes:	To demonstrate an understanding of concepts taught during the semester through simple calculations and models.
Module 1 Introduction to RCC design	ISI CODE COMPLIANCE Characteristics of RCC, nominal mix, Design mix. Evolution of different design theory, principle of limit state analysis, load path in a building, creating building frames and selecting sizes of structural elements based on thumb rules with guidelines of relevant codes
Module 2 Design of beam	Design of singly reinforced beams for flexure, shear, torsion and bond. Concept of doubly reinforced beams and design.
Module 3 Design of slab	Concepts and design of different types of slabs, behaviour and design of simply supported slabs spanning in one direction, two directions, continuous slab, cantilevered slab, flat slab, waffle slab, and inclined roof.
Module 4 Design of foundation and column	Soil Mechanics: Soil formation and resulting soil deposits, different types of soils and their physical properties, classification as per Indian standard system. Foundations: Types of foundations for RCC structures, Design of isolated column footing, retaining wall. Design of short and long axially loaded RCC Columns, Principles of staircase design.
Module 5 Practical	Laboratory: Soil testing, casting of cement concrete cubes, Compressive test of cement concrete cubes, and Tensile strength of steel. Visit construction sites for study of RCC structures.

Note: Most Architectural subjects do not have Textbooks. The Reference books mentioned below are for reference only and University question paper should be prepared from the Syllabus descriptions.

References

1. *Varghese, P. C. (2011). Limit state Design of Reinforced Concrete. PHI Learning.*
2. *Ramachandra, S. (2004). Limit State Design of Concrete Structures.*
3. *Scientific publishers.*
4. *Ramamrutham, S. (2000). Design of RCC Structures. New Delhi: Tata McGraw Hill Education.*
5. *Ramamrutham. S and Narayanan. R, (1997), Reinforced Concrete Structures, Dhanpat Kai Publication, New Delhi.*
6. *Punmia, B. C. (2005). Soil Mechanics and Foundation Engineering. Delhi: Laxmi publications.*
7. *Swamisaran. (2010). Analysis and Design of Substructures. 2nd Ed. (LSD).*
8. *Punmia, B. C. (2007). Limit State Design of Reinforced Concrete. Delhi: Laxmi Publications*
9. *IS 875- 1987*
10. *IS 800-2007*
11. *Explanatory Hand Book SP24 Design Aid SP 16,*
12. *Detailing of Reinforcement, SP 34*